# INFORMATION SYSTEM FOR COLLECTING INVENTORY AND SHARING RESOURCE FOR STUDENT ORGANIZATION

**\Disusun sebagai salah satu syarat menyelesaikan Program Studi Strata I pada Program Studi informatika Fakultas Komunikasi dan Informatika**


**Oleh:**

**BERLIAN EDRA BAGASKARA**

**L200164013**



**PROGRAM STUDI INFORMATIKA FAKULTAS**

**KOMUNIKASI DAN INFORMATIKA**

**UNIVERSITAS MUHAMMADIYAH SURAKARTA**


**2020**

**HALAMAN PERSETUJUAN**

# INFORMATION SYSTEM FOR COLLECTING INVENTORY AND SHARING RESOURCE FOR STUDENT ORGANIZATION

## PUBLIKASI ILMIAH

oleh:

**BERLIAN EDRA BAGASKARA**
**L200164013**

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Telah diperiksa dan disetujui untuk diuji oleh:
Dosen Pembimbing

**Husni Thamrin, Ph. D.**

**NIK.706**

## HALAMAN PENGESAHAN

# INFORMATION SYSTEM FOR COLLECTING INVENTORY AND SHARING RESOURCE FOR STUDENT ORGANIZATION

**OLEH**

**BERLIAN EDRA BAGASKARA**

**L200164013**

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**Universitas Muhammadiyah Surakarta**
**Pada hari Rabu, 15 Juli 2020**
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   **(Anggota II Dewan Penguji)**

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Nurgiyatna, S.T., M.Sc., Ph.D.
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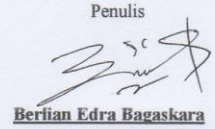

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INFORMATION SYSTEM FOR COLLECTING INVENTORY AND SHARING RESOURCE FOR STUDENT ORGANIZATION
Abstrak
Inventaris adalah sesuatu yang memiliki nilai guna bagi sebuah organisasi yang harus dimanfaatkan secara optimal. Data inventaris seharusnya tidak hanya dicatat, tetapi dikelola dengan baik schingga dapat diakses kapan saja secara akurat, cepat dan lengkap. Kemajuan komputerisasi yang baik menjadi solusi yaitu dengan menerapkan sebuah sistem informasi. Pengelolaan dan peminjaman inventaris yang ada di organisasi mahasiswa Universitas Muhammadiyah Surakarta masih menggunakan metode konvensional dalam pencatatn inventarisnya dan peminjaman antar organisasi mahasiswa tersebut. Sistem berbasis web ini nantinya bisa diakses oleh pengurus organisasi mahasiswa sebagai pengelolaan inventaris dan proses minjam meminjam antar organisasi mahasiswa. Metode yang digunakan dalam sistem ini mengguakan metode SDLC (System Development Life Cycle) dengan pendekatan waterfall menggunakan UML (Unified Modelling Language). Pengkodean sistem menggunakan bahasa pemrograman PHP dan MySQL sebagai database. Hasil dari penelitian ini berupa sistem informasi peminjaman inventaris berbasis web. Sistem telah melalui dua langkah pengujian diaman menggunakan pengujian black box mendapatkan hasil valid dan pengujian kuesioner oleh pengurus organisasi mahasiswa mendapatkan hasil dengan rata-rata 76.69 % yang menyatakan bahwa user setuju bahwa sistem ini untuk dikembangkan dan diterapkan dalam pengelolaan dan peminjaman inventaris antar organisasi mahasiswa.
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(MoU)

Berlian Edra dengan BEM UMS

Pada hari ini, Rabu 8 Juli 2020, (delapan Juli dua ribu dua puluh) telah terjadi perjanjian kerjasama antara pihak-pihak:

Nama : Berlian Edra Bagaskara
Instansi : Universitas Muhammadiyah Surakarta
Jabatan : Mahasiswa
Alamat : Jl. Werkudara A/39, Ngringo, Jaten, Karanganyar

Yang dalam perjanjian selanjutnya disebut PIHAK PERTAMA.

Nama : Danang Maulana Arif Saputra
Instansi : BEM UMS
Jabatan : Presiden Mahasiswa
Alamat : Griya Mahasiswa, Kampus 1 Universitas Muhammadiyah Surakarta

Dalam perjanjian ini selaku presiden mahasiswa, yang dalam perjanjian ini akan disebut sebagai PIHAK KEDUA.

Kedua belah pihak telah menyepakati hubungan kerjasama dalam **Pembuatan Sistem Informasi Peminjaman Invenaris Antar Ormawa yang Berbasis *Website*** dengan aturan sebagai berikut:

1. PIHAK PERTAMA akan membuatkan sistem informasi untuk peminjaman invenaris ormawa yang ada di UMS.
2. PIHAK KEDUA bersedia menyediakan hal-hal pendukung berupa data-data ormawa yang ada di UMS.
3. PIHAK PERTAMA berkewajiban menjamin kualitas dan mutu sistem informasi yang ditawarkan.
4. Setelah penyerahan sistem, PIHAK KEDUA akan memiliki hak penuh dalam pengelolaan sistem tersebut.
5. PIHAK PERTAMA tidak bertanggung jawab atas yang terjadi kepada sistem, hanya bisa memberikan saran dan masukan.

Perincian yang belum tercantum dalam MoU ini dan di musyawarahkan kemudian akan menjadi *addendum* dan bagian tak terpisahkan dari perjanjian ini.

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# INFORMATION SYSTEM FOR COLLECTING INVENTORY AND SHARING RESOURCE FOR STUDENT ORGANIZATION


## Abstrak

Inventaris adalah sesuatu yang memiliki nilai guna bagi sebuah organisasi yang harus dimanfaatkan secara optimal. Data inventaris seharusnya tidak hanya dicatat, tetapi dikelola dengan baik sehingga dapat diakses kapan saja secara akurat, cepat dan lengkap. Kemajuan komputerisasi yang baik menjadi solusi yaitu dengan menerapkan sebuah sistem informasi. Pengelolaan dan peminjaman inventaris yang ada di organisasi mahasiswa Universitas Muhammadiyah Surakarta masih menggunakan metode konvensional dalam pencatatn inventarisnya dan peminjaman antar organisasi mahasiswa tersebut. Sistem berbasis web ini nantinya bisa diakses oleh pengurus organisasi mahasiswa sebagai pengelolaan inventaris dan proses minjam meminjam antar organisasi mahasiswa. Metode yang digunakan dalam sistem ini mengguakan metode SDLC (System Development Life Cycle) dengan pendekatan waterfall menggunakan UML (Unified Modelling Language). Pengkodean sistem menggunakan bahasa pemrograman PHP dan MySQL sebagai database. Hasil dari penelitian ini berupa sistem informasi peminjaman inventaris berbasis web. Sistem telah melalui dua langkah pengujian diaman menggunakan pengujian *black box* mendapatkan hasil valid dan pengujian kuesioner oleh pengurus organisasi mahasiswa mendapatkan hasil dengan rata-rata 76.69 % yang menyatakan bahwa user setuju bahwa sistem ini untuk dikembangkan dan diterapkan dalam pengelolaan dan peminjaman inventaris antar organisasi mahasiswa.



**Kata Kunci:** Berbagi Sumber Daya, Inventaris, Peminjaman , PHP,



## Abstract

Inventory is something that has value for an organization that must be utilized optimally. Inventory Data should not only be recorded, but managed properly so that it can be accessed anytime accurately, quickly and fully. Good computerized progress is a solution that is by implementing an information system. The management and borrowing of inventories in the student organization of the Muhammadiyah University of Surakarta students still use conventional methods in its inventory recording and lending between the student organizations. This web-based system can then be accessed by the student organization manager as the inventory management and the lending process of borrowing between student organizations. The method used in this system is a method of SDLC (System Development Life Cycle) with a waterfall approach using UML (Unified Modelling Language). System encoding uses the PHP and MySQL programming languages as a database. The result of this research is a web-based inventory lending information system. The system has been through two testing steps secured using black box testing to get valid results and test questionnaires by the student organization administrators get results with an average of 76.69 % stating that the user agrees that the system is to be developed and applied in inventory management and borrowing among student organizations.



**Keywords**: Inventory, Landing, PHP, Resource Sharing


## 1. INTRODUCTION

The development of information systems technology has become more widespread. The impact of technology has brought changes and developments in various fields. Improving service information

systems must also be improved (Puspaningrum & Sudarmilah, 2020). Despite the high potential of the technology as enabler of social life, many questions remain (Hamilton et al., 2009). Along with the development of information technology, the system is also needed to complete the information.

Assets and inventory items are something that has a use value for the institution, utilizing the value of goods optimally and knowing their existence (Aset et al., 2020). The inventory lending system contained between Muhammadiyah University of Surakarta in its implementation is still done manually. The lending process of student organizations in Muhammadiyah University of Surakarta has been carried out so far by visiting the secretariat of related organizations that have inventory items to be borrowed and also to see the lending information available at the secretariat of the organization. In the process that has been running, Student organization who want to borrow an inventory of goods still do not know in which student organization that has the goods being needed, so they still need to find out the information manually. Lending and returning services that are carried out manually can increase errors in recording, as well as a lack of efficiency in the service (Cahyaningtyas & Siska, 2015).

Technology has been proven to be used to support better and faster data processing performance with electronic media such as computers, media which are very helpful in processing data into information (Prasetyo, 2017). Web-based applications can build a computerized loan system that can accommodate payment transactions that are easy, fast, safe and can display loan data reports that are fast and accurate for the needs of the company's financial statements (Permitasari & Sahara, 2018).

Therefore, the development of existing systems in the Muhammadiyah University of Surakarta by making an application or program to assist in managing loans online either via desktop, smartphone or tablet so that the student organization in campus become easier to borrow inventory items. The existence of an inventory lending information system is useful to improve the quality of recording, controlling and lending transactions of inventory items and avoiding misunderstandings in the process of lending assets and goods. Establish and perfect the management information system, can provide information quickly and accurately (Zhang et al., 2011).

Most large companies and organizations in developing countries are adopting web-based applications to do their business efficiently and effectively by taking advantage of Internet presence that has rapidly spread around the world (Muyumba & Phiri, 2017). Based on the discussion above, the existence of this information system hopes that it will help the service of borrowing inventory between student organizations in managing their inventory.

## 2. METHOD

### 2.1 System Development Method

The methods used in the development of this system is Waterfall model. The waterfall model provides a sequential or sequential flow of software approach starting from Requirement Analysis, Design, Coding, Implementation and Testing, and Maintenance (Khasbi et al., 2016). The waterfall model is according to other engineering models and there are documentation at each stage so it is easy to monitor the software. The primary use for the Inventory Management System is to track and monitor sales and available inventory of a business system.(Chaudhari & Wankhede, 2016).

a. Analysis of software needs is a stage of assigning features in the software according to the needs of the user consultation. The concept of this need analysis is to determine the specifications of the software compiled through the consultation with the user about the services / functions that the user wants to be owned by the software, the user restrictions that will be in the software, and the purpose of the software.

   Functional needs of this system development such as system can do CRUD in data of goods, system can do lending transactions, system can display the loan history, system can display the availability of goods data and system can display the loan report.

   The needs for non functional development of this system among other necessary software is the Windows operating system (XP, 7, 8, 10) that supports XAMPP and WEB applications. It also takes VSCode as a code editor and Web Browser.

b. Design is a multistep process that focuses on the design of software program creation including data structures, software architectures, interface representations and coding procedures. Development of this system uses UML (Unified Modelling Language) that is use case diagrams and flow charts.

c. Coding is a design translation in a language that computer can recognize. This stage is a concrete stage in the system. Encoding uses PHP language and MySQL as a database to develop programs that later support the processes done by the user. PHP working Model is almost the same as HTML only in the process, when the PHP file is executed it will perform the data management which is later displayed in HTML form, unlike with HTML that only displays data without processing. (Rifky Rajendra, Kodrat Imam Satoto, 2012). MySQL is a Relational Database Management System (RDBMS) distributed for free under the GPL (General Public License) license. Where everyone is free to use MySQL, but can not be used as closed source derivative

products. The system was developed with user capability reference in applying it. This step is taken to facilitate the user in system usage when applied.

d. Testing and Implementation, the process is done to minimize the error and insert the resulting output in accordance with the wishes. First black box testing by input data many times until system error is found. The second Test uses a questionnaire by giving a question that is filled by the respondent. The use of the system to the maximum extent is also indispensable to determine the extent to which the system can be handled. The results of later testing were made a reference for improving system and system enhancements before the deployment phase.

e. Maintenance, repeats the development process starting from the specifications for the existing software changes, but not to create new software. The changes could be due to an error because the software must adapt the new environment. System maintenance is done when there is an error in lending transaction management.

The data flow diagram here is the new purposed business workflows that integrate the function of the software itself (Wibisono et al., 2016). Waterfall method can be seen in Figure 1.

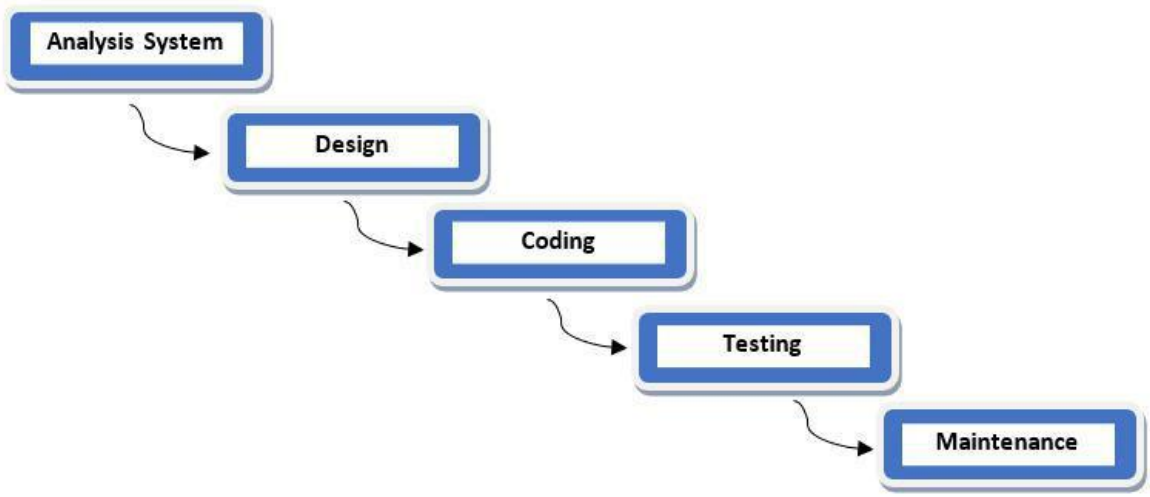


Figure 1. Waterfall Method

## 2.2 Application Design

### 2.2.1 User Case Diagram

The Use Case diagram illustrates all activity performed by the system from an outside observation point of view. It can be interpreted as a group in a series of interconnected and sequential system formation that is supervised by an actor. Use case can be seen in Figure 2.

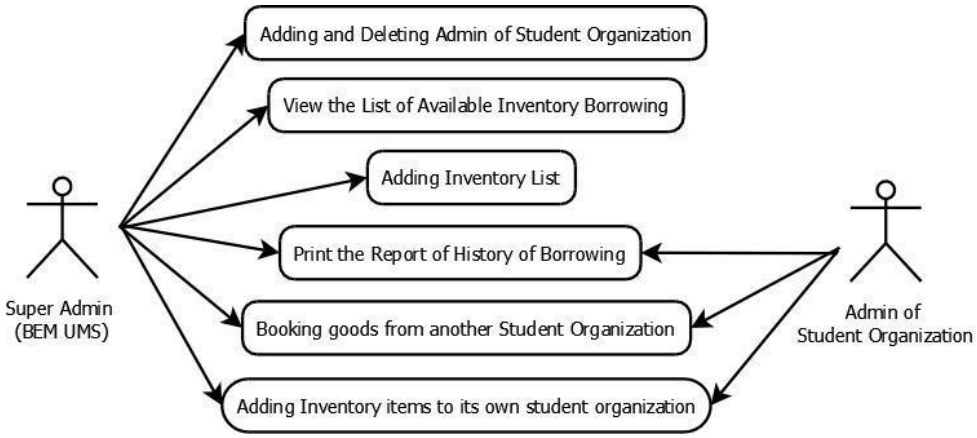


Figure 2. Use Case

### 2.2.2 Flow Chart

The main purpose of this system is how a student organization can borrow to other student organizations over the web. The first borrowing flow the user sees the item then selects the item to be borrowed until the confirmation from the owner can be seen in Figure 3.

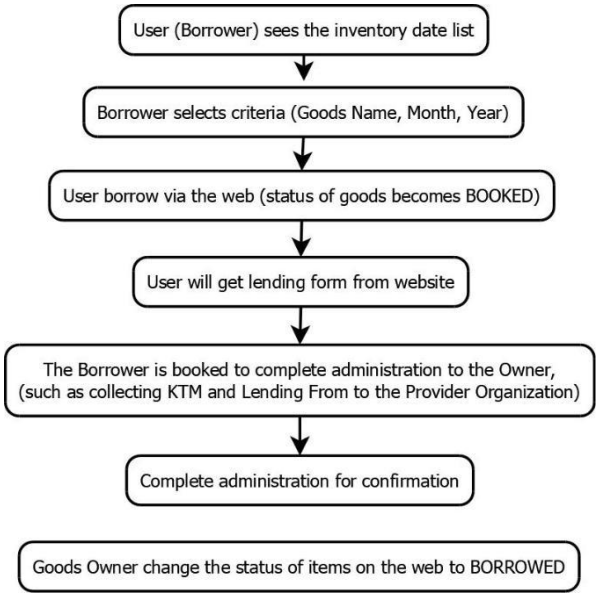


Figure 3. Flow Chart of Borrowing Goods

## 3. RESULTS AND DISCUSSION

Based on the research design that has been made, the goal of this research is to produce an information system to borrow student organization inventory based on a desktop web that can be used by every user in student organizations.

### 3.1 Login Page

The login page is the page that is used to verify and can only be accessed by the admin, that is, the administrator of the student organization that has the authority to manage the system. User

must input the email of his student organization and the correct password to login into the system. There is the feature of Forgot of Password, if the user click it, it will show the dialog window and give information of BEM UMS as the super admin, and the user can contact them to reset the password.

### 3.2 Profile Page

This is the main menu of the website. The page will appear first when entering the website after logging in is presented with a view and all sub menus consisting of Lending History, Borrowing History, Add Inventory, Delete Inventory, and Change Inventory. In this page show the information about the user such as email, location, contact. There are feature for change the password and information of user.

#### 3.2.1 Submenu Lending History

In this submenu the function is to display the history of borrowing transactions that have entered, namely other organizations that have borrowed goods owned by the user, which can be seen in Figure 4. The print feature on the right as a transaction history report that has been entered and is used as a report on the administration of student organizations. There is also an edit feature that is used to change the status of a transaction that was originally "borrowed" to "ordered" or vice versa. The delete button contained in this submenu is used to delete transactions that occur.

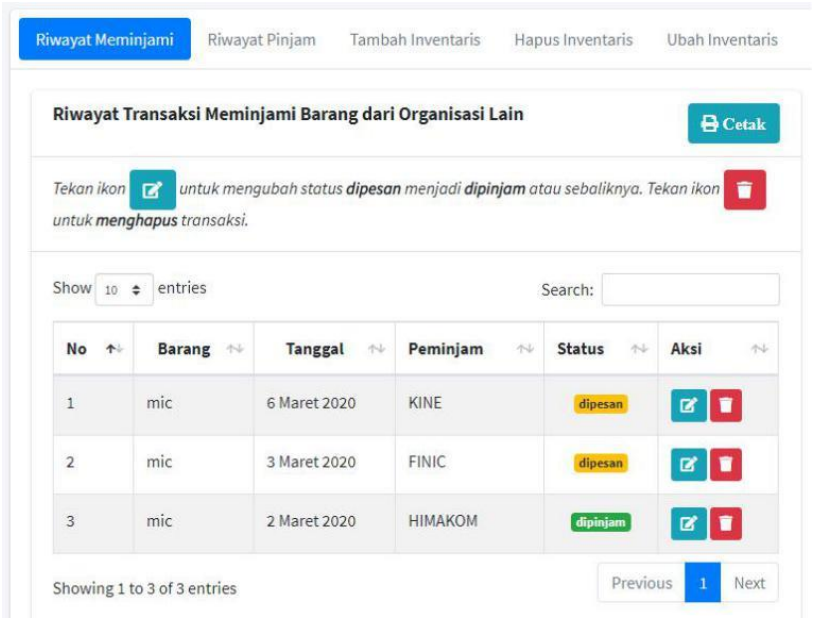


Figure 4. Submenu Lending History

#### 3.2.2 Submenu Borrowing History

This submenu works the same as the borrowing history submenu but in this submenu displays a loan transaction where the user has borrowed other organization's items but user can not edit the

status. On the right side there is a print feature used to create an outgoing transaction history report that can be used as evidence administration of these student organizations. The delete button contained herein is used to delete the transaction that occurred. In the print reports section, there is a feature to print at the date interval. I chose to grouping by date (not by week, month or year) because the periodization of each student organization varies, and there may be those who want to print in the first or second quarter of my management, and that's specific to the date set. Can be seen on Figure 5.


Figure 5. Print the Report

### 3.2.3 Adding Inventory

This page is used by users to add to the inventory list which can later be lent by other organizations. It will give the option for user that contain the goods what the user doesn't has. If the user can not find the goods in list of it, he can contact to BEM UMS as the super admin to add that goods in list of inventories.

### 3.2.4 Change Status Inventory

This page is used to change the status in goods owned. The user can user the status of the goods what he has into "used" or "quarantine" and select the date what the user want.

### 3.2.5 Deleting Inventory

On this page the user is used to delete his inventory list. There is an option of list what user's goods. User choose of goods what he has for deleting from list inventory.

## 3.3 Faculty Menu

The faculty menu shows a list of the faculties that will be used by them to choose which faculty they will borrow. The faculty menu will go to the page to choose loan data to enter the month, year and item categories to be borrowed, and then go to the page to see the inventory list according to the previously chosen category.

### 3.3.1 Page to Choose Loan Data

This page functions by the user to enter the month, year and goods categories to be borrowed. This page will go to the Inventory List page in the month, year and item categories that will be selected previously.

### 3.3.2 Page to Display Inventory List

After the user chooses the category to be borrowed, the user will be directed to a page looking at the inventory list according to the chosen category. On this page displays the status of goods belonging to student organization that has a category of goods that have been previously selected in the month and year previously selected according to Figure 5. On this page also displays 3 input data that the user uses to select the organization that he will borrow and on the date he will borrow. This page is displayed in Figure 6.

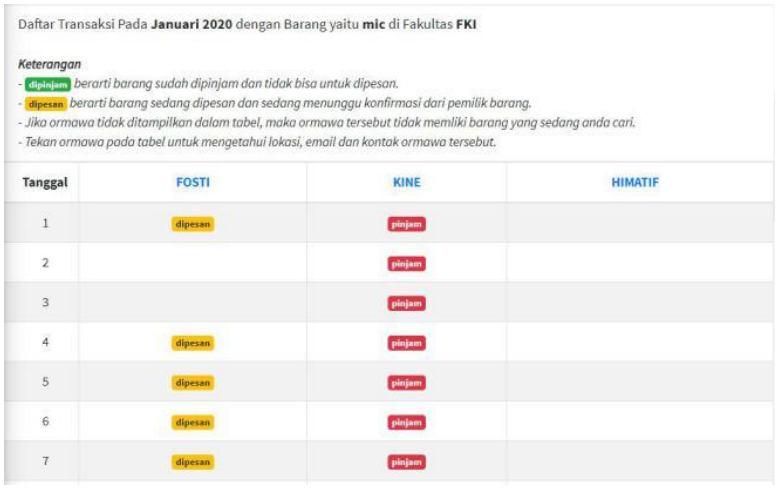


Figure 6. Inventory List

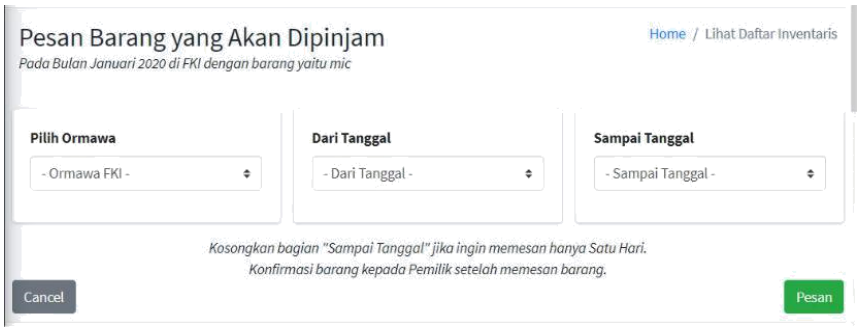


Figure 7. Input Data to Borrow

## 3.4 Goods Catalog Page

A functioning page displays a list of items and owners from all student organizations. This page makes it easy for users to find items or owners to borrow. The user can search by goods or name of student organization in Muhammadiyah University of Surakarta what he want to be borrowed.

## 3.5 Super Admin Page

This page can only be accessed by the main admin who is used to add and delete new student organizations and new items. This page is important because it is to minimize student organizations that add items themselves and the names of items that already exist beforehand.

### 3.6 Black Box Testing

Testing is an important part in developing an application. Testing is done to ensure quality and find out the weaknesses of the application that has been made. In testing the Black Box system is done by testing the menu section of the application whether it produces the desired results or not. From the black box testing there are menus that produce the following test.

Table 1. Black Box Testing

| No | Testing Steps | Test Case | Expected results | Results |
|---|---|---|---|---|
| 1 | Student Organization Admin Login | Username and Password are correct | User enters into the system | Valid |
| 2 | Change the status of a borrowing transaction in login history | Pressing the Edit button to change the status | Transaction Status changed from "booked" to "borrowed" or vice versa | Valid |
| 3 | Delete a loan transaction in your login history | Pressing the Delete key to delete a transaction | Pressing the Delete key to delete a transaction | Valid |
| 4 | Print the Borrowing History Report | Press the Print button to generate a report | Downloaded File in PDF form containing the borrowing history report | Valid |
| 5 | Delete a loan transaction in the outbound history | Pressing the Delete key to delete a transaction | Pressing the Delete key to delete a transaction | Valid |
| 6 | Print an Lending History report | Press the Print button to generate a report | Downloaded File in PDF form containing Lending history report | Valid |
| 7 | Add Inventory List | Select a list of items and press the Add Item button | Selected items are listed in the inventory list | Valid |
| 8 | Delete Inventory List | Select a list of items and press the delete item | Selected items deleted from inventory list | Valid |
| 9 | Change the inventory status owned | input category of goods owned, date and status | Selected item changed status on selected date before. | Valid |
| 10 | Choose one of the faculties to enter a borrowed category | Select categories of months, years and items to borrow | Move to a page see inventory listings with selected categories | Valid |
| 11 | Borrow items by ordering items | Input selected student organization data and date to be booked | Items are ordered with pre-selected categories and printed loan forms | Valid |

From the table 1, the results of the black box testing state that the system can run according to its functions and features such as viewing Lending History, Borrowing History and printing reports according to the initial design of the system.

### 3.7 Usability Testing

Testing a questionnaire in an information system is very important to know the level of satisfaction and accuracy of all aspects of the system. The admin is a student organization manager is a valuation parameter in addition to some questions that have to be rejected to be the assessment. That is, the individual impact means the extent to which it has affected the ability and effectiveness on behalf of the organization of the user, the impact of the organization means the extent to which the system has an increasing and organizational capability, Quality information means the size of the quality information generated system, the quality of the system means a measure of performance from technical and design perspectives. Because of the quality of information, systems and services are very positive influence on the user and user satisfaction, next will be positive effect on the "net benefit" or results (Herlambang & Thamrin, 2018).

The test was taken from 29 respondents from the student organization of Muhammadiyah University of Surakarta. In addition to being used by research from Herlambang which uses the IS-Impact model as a benchmark for usability, here the author uses criteria on the usability instrument uses the Likert scale by providing five answer options as follows.

Total Score = Scale Value x Amount of Answer

Maximum Score = Amount of Respondent Highest Score Likert = 29 x 5 = 145 =
(Total Score / Maximum Score) 100%

Table 2. Percentage and Category

| Criteria | Scale Value | Percentage | Category |
|---|---|---|---|
| Highly Agree (HA) | 5 | 81% to 100% | Very Good |
| Agree (A) | 4 | 61% to 80% | Good |
| Neutral (N) | 3 | 41% to 60% | Enough |
| Disagree (D) | 2 | 21% to 40% | Bad |
| Highly Disagree (HD) | 1 | 1% to 20% | Very Bad |

Table 3. Calculation Questionnaire

| No | Question | Amount of Answer | | | | | Total Score | Percentage (Interval) |
|---|---|---|---|---|---|---|---|---|
| | | HA | A | N | D | HD | | |
| 1 | I feel this system is easy to use | 2 | 21 | 4 | 2 | 0 | 110 | 75.86 % |
| 2 | I feel the features of this system are running properly | 3 | 15 | 8 | 3 | 0 | 105 | 72.41 % |
| 3 | I feel the use of menus or features easy to use | 3 | 17 | 8 | 1 | 0 | 109 | 75.17 % |
| 4 | This system runs according to expected needs | 3 | 21 | 1 | 4 | 0 | 110 | 75.86 % |
| 5 | The system has an attractive and convenient interface for users | 1 | 16 | 10 | 2 | 0 | 103 | 71.03 % |
| 6 | I feel the information provided is easy to understand | 2 | 18 | 6 | 3 | 0 | 106 | 73.10 % |
| 7 | This system helps in the search of goods that exist in another student organization | 9 | 16 | 2 | 1 | 1 | 118 | 81.38 % |
| 8 | I feel this system is beneficial for users | 9 | 17 | 2 | 1 | 0 | 121 | 83.45 % |
| 9 | This system helps my organization in inventory management | 7 | 16 | 5 | 0 | 1 | 115 | 79.31 % |
| 10 | I feel this system is beneficial to my individual and organization | 6 | 18 | 4 | 0 | 1 | 115 | 79.31 % |
| | **Average Percentage** | | | | | | | **76.69 %** |

Calculation result based on Table 2 and Table 3 above resulted that the system get the category of "good" by 76.69 % which means very agreed to the information system is developed.

## 4. SUMMARY

Student Organization Inventory Loan Information System has been developed. After identifying the problem and analyzing the needs, the system is designed according to the needs of users where the application of this system is more focused on certain functions including loan transactions, a list of historical transactions in and out as well as reports. With this website-based system can provide administrator of the student organization in search of items borrowed from other student organizations, inventory management and easiness in seeing the availability goods to be borrowed. After passing black box testing with the results of all the features running properly and usability testing to the student organization by using questionnaires and obtaining 76.69% results stating that the user agrees that the system is to be developed and applied in inventory management and borrowing between student organizations.

## 5. RELATED RESEARCH

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